

ABSTRACT OF THE DISCLOSURE

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10 An indirectly heated button cathode for use in the ion
source of an ion implanter has a button member formed of a slug
of tantalum mounted in a collar of tungsten. The lower
thermionic work function of tantalum causes electron emission to
be concentrated over the surface of a tantalum slug. The
15 tantalum slug may be mounted to enable it to operate at a higher
temperature compared to the surrounding tungsten collar portion.
The resultant concentrated plasma in the ion source is effective
to enhance the production of higher charge state ions,
15 particularly P^{++} for subsequent acceleration for high energy
implantation.

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